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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/572,901	03/21/2006	Seon Ho Han	CU-4701 WWP	4733
26530	7590	02/04/2008		
LADAS & PARRY LLP 224 SOUTH MICHIGAN AVENUE SUITE 1600 CHICAGO, IL 60604			EXAMINER KINKEAD, ARNOLD M	
			ART UNIT	PAPER NUMBER
			2817	
			MAIL DATE	DELIVERY MODE
			02/04/2008	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

Application No.

10/572,901

Applicant(s)

HAN ET AL.

Examiner

Arnold Kinhead

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 17-20 is/are allowed.
- 6) ☒ Claim(s) 1,2,6-8 and 12-15 is/are rejected.
- 7) ☒ Claim(s) 3-5,9-11 and 16 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 March 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☒ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_.

- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_.

## **DETAILED ACTION**

### ***Specification***

The abstract of the disclosure is objected to because it should be on a separate page. Correction is required. See MPEP § 608.01(b).

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 2 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 2, line 3, what exactly does " 2's multiple number " mean?

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 6,7,8,12,13, 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Huehne et al(US 6,496,556).

The reference by Huehne et al discloses a digital and analog controlled VCO, see abstract figure and abstract, that shows the oscillator(130) with a digital input(N bits, coarse tuning) and analog input(fine tuning)(output of LPF); a digital tuner(including the

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window comparator and counter) is shown where the analog input is compared with first and second threshold voltages(upper and lower reference voltages). This allows the digital tuning value to be varied. As noted in col. 4, lines 34-52, the clock in put to the counter allows for the development of the intermittent signal output to change the digital value and also, on lines 45-50, a frequency division (integer) is carried out to provide the different output frequencies. A second divider(132) is shown.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 2 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Huehne et al(above) in view of Prior Art Fig. 1. and Duncan et al(US 6,803,829).

The reference by huehne et al discloses a digital and analog controlled VCO, see abstract figure and abstract, that shows the oscillator(130) with a digital input(N bits, coarse tuning) and analog input(fine tuning)(output of LPF); a digital tuner(including the window comparator and counter) is shown where the analog input is compared with first and second threshold voltages(upper and lower reference voltages). This allows the digital tuning value to be varied. As noted in col. 4, lines 34-52, the clock in put to the counter allows for the development of the intermittent signal output to change the digital value and also, on lines 45-50, a frequency division (integer) is carried out to provide the different output frequencies. A second divider(132) is shown.

The reference to Huehne et al does not show a typical coarse/fine tuning VCO with the inductors, capacitors and NMOS configuration, however, the reference to Duncan et al is relied on to show this. See abstract figure with inductors(L) coupled to power supply (Vdd) and first and second nodes; also connected to these nodes are the first and second variable capacitors(4515). The NMOS drivers(current supply) is connected to ground. a multiple of switched capacitors(2 on either side of the differential structure) allow for the digital tuning. The analog input is between the variable capacitors. Note the parallel arrangement of the LC tank circuit, similar to applicants'.

The reference to Huehne et al does not show the typical LPF with resistor/capacitor arrangement, however, this is conventional and is shown in the applicants' prior art figure 1 with a serial resistor/capacitor and additional capacitor to provide the control signal to the VCO.

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In light of the above it would have been obvious to one of ordinary skill in the art to have recognized the general PLL as shown by Huehne et al with digital/analog tuning to include the conventional LPF as highlighted in prior art figure 1 for providing the control signal as desired to the VCO. The use of an LC type VCO as shown in Duncan et al is a conventional digital/analog input type VCO that allows for the coarse and fine tuning as is required in the general PLL shown by Huehne et al reference.

***Allowable Subject Matter***

Claims 3-4, 9, 10, 11, 16 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 17-20 are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arnold Kinhead whose telephone number is 571-272-1763. The examiner can normally be reached on Hoteling.

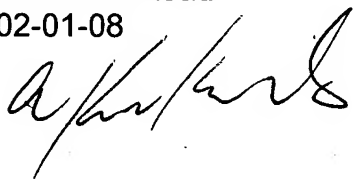
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Pascal can be reached on 571-272-1769. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Arnold Kinhead

02-01-08

A handwritten signature in black ink, appearing to read 'A. Kinhead', is written over the typed name and date.